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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/802,591 | 03/17/2004 | Noboru Kuriyama | SAS2-PT072 | 8919 |

3624 7590 12/18/2006
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UNITED PLAZA, SUITE 1600
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PHILADELPHIA, PA 19103

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| EXAMINER |
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A, MINH D

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| ART UNIT | PAPER NUMBER |
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2821

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 12/18/2006 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

| | | | | |
|------------------------------|------------------------|--|---------------------|--|
| Office Action Summary | Application No. | | Applicant(s) | |
| | 10/802,591 | | KURIYAMA, NOBORU | |
| | Examiner | | Art Unit | |
| | Minh D. A | | 2821 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,6-9,15,16 and 19-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,6-9,15,16 and 19-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>3/17/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant's election of claims 1-2, 6-9, 15-16 and 19-22 in the reply filed on 9/25/06 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. This is a response to the Applicants' filing on 3/17/04. In virtue of this filing, claims 1-2, 6-9, 15-16 and 19-22 are currently presented in the instant application.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Inventorship

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Information Disclosure Statement

5. The information disclosure statement (IDS) submitted on 3/17/04 in compliance with the provisions of 37 CFR 1.97. Accordingly, the information

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disclosure statement is being considered by the examiner.

Drawings Accepted

6. The drawings submitted on 3/17/04 are accepted.

Claim Objections

7. Claims 6, 8, 19-20 and 22 are objected to because of the following informalities:

Claim 6, line 2, deleted "claims 1 to 4" and inserted ---claims 1 to 2---.

Claim 8, line 1, deleted "claims 1 to 4" and inserted ---claims 1 to 2---.

Claim 19, line 2, deleted "claims 15 to 18" and inserted ---claims 15 to 16---.

Claim 20, line 2, deleted "claims 15 to 18" and inserted ---claims 15 to 16---.

Claim 22, line 2, deleted "claims 15 to 18" and inserted ---claims 15 to 16--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-2, 6-9, 15-16, 19-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP(2000-133412).

2. Regarding claims 1 and 2, JP(2000-133412) discloses in figures 1-6, a glow-discharge apparatus that has a high-frequency power source, in which a cutting pulse is output for time T1 to the high-frequency power source to stop a

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supply of power to the glow-discharge apparatus, when $dV_r/dt - dV_f/dt$ increases over a first level, where V_f and V_r are a traveling-wave voltage and a reflected-wave voltage applied to the glow-discharge apparatus. See pages 4-8.

JP(2000-133412) does not clearly disclose a first level and second level when V_r/V_f increases to a second level or a higher level within a preset time T_o after the supply of power to the glow-discharge apparatus is stopped.

This difference is not of patentable merit since the first level and second level are operated in the same manner, when the preset the time for measuring a trailing edge of the cutting pulse. Therefore, to employ a preset the time for first level and second level in the driving circuit of JP(2000-133412) upon a particular level or adjustment of use, would have been deemed obvious to a person skilled in the art .

Regarding claim 6, JP(2000-133412) discloses the arc discharge is determined to have developed when V_r/V_f remains at the second level or a higher level for time T_2 or longer. See figure 6.

Regarding claim 7, JP(2000-133412) inherently discloses the first level ranges from $V_{fmax} * 0.05$ to $V_{fmax} * 0.2$, and the second level ranges from 0.5 to 0.95.

Regarding claim 8, JP(2000-133412) inherently discloses a preset time T_o is measured, starting at a trailing edge of the cutting pulse. See figure 6.

Regarding claim 9, JP(2000-133412) inherently discloses the preset time T_o is measured, starting at a trailing edge of the cutting pulse. See figure 6.

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Regarding claims 15-16, JP(2000-133412) discloses in figures 1-6, a glow-discharge apparatus that has a high-frequency power source, in which a cutting pulse is output for time T_1 to the high-frequency power source to stop a supply of power to the glow-discharge apparatus, when $dV_r/dt - dV_f/dt$ increases over a first level, where V_f and V_r are a traveling-wave voltage and a reflected-wave voltage applied to the glow-discharge apparatus. See pages 4-8.

JP(2000-133412) does not clearly disclose a first level and second level when V_r/V_f increases to a second level or a higher level within a preset time T_o after the supply of power to the glow-discharge apparatus is stopped.

This difference is not of patentable merit since the first level and second level are operated in the same manner, when the preset the time for measuring a trailing edge of the cutting pulse. Therefore, to employ a preset the time for first level and second level in the driving circuit of JP(2000-133412) upon a particular level or adjustment of use, would have been deemed obvious to a person skilled in the art .

Regarding claim 19-23, JP(2000-133412) inherently discloses in figures 1-6, that, the first level ranges from $V_{fmax} \cdot 0.05$ to $V_{fmax} \cdot 0.2$, the second level ranges from 0.5 to 0.95 and the second cutting-pulse output unit determines that the arc discharge has developed, when V_r/V_f remains at the second level or a higher level for time T_2 or longer.

Citation of relevant prior art

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10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Prior art Hug et al (U.S. Patent No. 6,693,944) discloses a sputtering metal ion laser.

Prior art Okazako et al (U.S. Patent No. 5,539,303) discloses a method for monitoring atmospheric pressure glow discharge plasma using current pulse count.

Prior art Johnson et al. (U.S. Patent No. 6,332,961) discloses a device and method for detecting and preventing arcing in RF plasma system.

Prior art Eguchi (U.S. Patent No. 4,177,404) discloses an arc detector for glow discharges.

Inquiry

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Dieu A whose telephone number is (571) 272-1817. The examiner can normally be reached on M-F (5:30 AM-2:45 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Callahan can be reached on (571) 272-1740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For

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more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner

Minh A

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12/10/06


SHIH-CHAO CHEN
PRIMARY EXAMINER